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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

SON, LINH L D

ART UNIT	PAPER NUMBER
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2135

DATE MAILED: 08/17/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/784,893

Applicant(s)

PETING ET AL.

Examiner

Linh Son

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 February 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-2, 4-8, and 10-11 are rejected under 35 U.S.C. 102(e) as being anticipated by Wong (US/6693456, Provisional application 60223047).
3. As per claims 1 and 7, Wong discloses the “Interconnection Network for a Field Programmable Gate Array” invention, which teaches an apparatus comprising a plurality of switches (Col 4 lines 18-48) each having a first input terminal, a second input terminal, a first output terminal and a second output terminal, each of the plurality of switches having a pass-through state in which data input to the first input terminal is passed to the first output terminal and data input to the second input terminal is passed to the second output terminal, and a cross-over state in which data input to the first input terminal is passed to the second output terminal and data input to the second input terminal is passed to the first output terminal (Col 5 lines 4-13), the plurality of switches interconnected to provide, at the output terminals of the plurality of switches, permutations of signals received via the input terminals of the plurality of switches (Col 4 lines 10-17).

As per claims 2 and 6, Wong discloses the apparatus of claim 1 wherein one or more of the plurality of switches has a broadcast state in which data input to the one of the first input terminal and the second input terminal is passed to the first output terminal and to the second output terminal (Col 5 line 63 to Col 6 line 5).

As per claim 4, Wong discloses the apparatus of claim 1 wherein one or more of the plurality of switches comprises: a first multiplexer coupled to the first input terminal and to the second input terminal to receive signals from the first input terminal and the second input terminal, the first multiplexer to pass signals from the first input terminal and the second input terminal to the first output terminal; and a second multiplexer coupled to the first input terminal and to the second input terminal to receive signals from the first input terminal and the second input terminal, the second multiplexer to pass signals from the first input terminal and the second input terminal to the second output terminal (Col 5 lines 14-25).

As per claim 5, Wong Discloses the apparatus of claim 4 further comprising a control line to provide a control signal to the first multiplexer and to the second multiplexer such that when the control signal is in a first state the first multiplexer passes signals from the first input terminal to the first output terminal and the second multiplexer passes signals from the second input terminal to the second output terminal and when the control signal is in a second state the first multiplexer passes signals from the second input terminal to the first output terminal and the second multiplexer passes signals from the

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first input terminal to the second output terminal (Col 5 lines 14-25, and Col 5 line 63 to Col 6 line 5).

As per claim 8, Wong discloses a method comprising: receiving a set of bits; passing the set of bits through multiple layers of switches, wherein each of the switches operates in a pass-through state in which data input to the first input terminal is passed to the first output terminal and data input to the second input terminal is passed to the second output terminal, or a cross-over state in which data input to the first input terminal is passed to the second output terminal and data input to the second input terminal is passed to the first output terminal, the switches interconnected to provide multiple permutations of signals input to the plurality of switches; and outputting a permuted version of the set of bits (Col 5 line 4 to Col 6 line 5).

As per claim 10, Wong discloses the method of claim 8 further comprising providing a control signal to each of the switches, wherein the control signal causes the switches to be in either the pass-through state or the cross-over state (Col 5 line 63 to Col 6 line 5).

As per claim 11, Wong discloses the method of claim 10 wherein the control signals are retrieved from a control register (Col 5 lines 4-14).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong.

6. As per claims 3 and 9, Wong discloses the apparatus and the method of claims 1 and 8. However, Wong does not teach the plurality of switches comprise 352 switches coupled as 32 by 11 array to provide a 64-bit Benes fabric. Nevertheless, Wong does teach an example of an 8x8 Benes network which produce 4 bits output permuted in 5 levels of switches (Col 5 lines 25-62). Further, Wong notes many variants of the Benes Network with arbitrary numbers of inputs and a proportional number of switch cells. The number of input and output bits equal to the number of switch cells divide by two. Therefore, it would have been obvious at the time of the invention was made for one have ordinary skill in the art that the 64 bits permutation requires 32 switches and the 11 levels of permutation is an optimum level number that can be obtained by one having ordinary skill in the art.

Conclusion

1. Any inquiry concerning this communication from the examiner should be directed to Linh Son whose telephone number is (703)-305-8914.
2. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Kim Y. Vu can be reached at (703)-305-4393. The fax numbers for this group are (703)-872-9306 (official fax). Any inquiry of general nature or relating to the status of this application or proceeding should be directed to the group receptionist whose telephone number is (703)-305-9600.

Linh LD Son

Patent Examiner

Linh LD Son
AU 2135